IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant: Jill MacDonald Boyce Examiner: Thompson, J.

Serial No: 10/560,499 Group Art Unit: 2625

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For: METHOD AND APPARATUS FOR LOW-COMPLEXITY SPATIAL SCALABLE DECODING

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APPEAL BRIEF

Applicant appeals the status of Claims 1-9 as presented in response to a non-final Office Action dated September 21, 2010 and rejected in a final Office Action dated November 19, 2010, pursuant to the Notice of Appeal filed concurrently herewith and submit this appeal brief.

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1. Real Party in Interest

The real party in interest is THOMSON LICENSING, the assignee of the entire right title and interest in and to the subject application by virtue of an assignment recorded with the Patent Office on December 21, 2005 at reel/frame 017363/0928.

2. Related Appeals and Interferences

We note that the instant application is related in disclosed subject matter to U.S. Patent Application Ser. No. 10/559,242 (hereinafter the "'242 Application"). In that regard, we further note that the instant application is primarily directed to decoder/decoding claims, while the '242 Application is primarily directed to encoder/encoding claims. Responsive to a non-final Office Action dated September 14, 2010 and a final Office Action dated November 17, 2010 (i.e., twice rejected a Notice of Appeal and corresponding Appeal Brief were filed concurrently on January 6, 2011 for the '242 Application.

3. Status of Claims

Claims 1-9 are pending, stand rejected, and are under appeal. A copy of the Claims 1-9 is presented in Section 8 below.

4. Status of Amendments

A Preliminary Amendment under 37 CFR §1.115, mailed to the PTO on December 12, 2005, was entered. An amendment under 37 CFR §1.111, mailed to the PTO on November 1, 2010 in response to a non-final Office Action dated September 21, 2010, was entered. No Responses/Amendments were filed subsequent to the above Amendment on November 1, 2010. A final Office Action dated November 19, 2010, to which this Appeal Brief is directed, is currently pending.

5. Summary of Claimed Subject Matter

Independent Claim 1 is directed to "[a] spatial scalable video decoder for receiving each of a standard-resolution bitstream and a high-resolution scalable bitstream and providing a high-resolution video sequence" (Claim 1, preamble).

The subject matter of the first element (beginning with "an I-picture detector") recited in Claim 1 is described, e.g., at: page 8, lines 9-12 and 26-30. Moreover, the subject matter of the first element of Claim 1 involves, e.g.: element 464 of FIG. 4.

The subject matter of the second element (beginning with "a non-scalable standard-resolution Intra decoder") recited in Claim 1 is described, e.g., at: page 8, lines 9-17 and 30-34. Moreover, the subject matter of the second element of Claim 1 involves, e.g.: element 466 of FIG. 4.

The subject matter of the third element (beginning with "a high-resolution video decoder") recited in Claim 1 is described, e.g., at: page 8, lines 18-22 and page 9, lines 1-2. Moreover, the subject matter of the third element of Claim 1 involves, e.g.: element 482 of FIG. 4.

The subject matter of the fourth element (beginning with "a selector") recited in Claim 1 is described, e.g., at: page 8, lines 14-25 and page 9, lines 2-5. Moreover, the subject matter of the fourth element of Claim 1 involves, e.g.: element 486 of FIG. 4.

Independent Claim 8 is directed to "[a] decoding method for providing spatial scalable decoded video data" (Claim 8, preamble).

The subject matter of the first element (beginning with "receiving a standard-resolution bitstream") recited in Claim 8 is described, e.g., at: page 8, lines 9-12. Moreover, the subject

matter of the first element of Claim 8 involves, e.g.: element 464 of FIG. 4.

The subject matter of the second element (beginning with "receiving a high-resolution scalable bitstream") recited in Claim 8 is described, e.g., at: page 8, lines 18-20. Moreover, the subject matter of the second element of Claim 8 involves, e.g.: element 482 of FIG. 4.

The subject matter of the third element (beginning with "non-scalably Intra decoding") recited in Claim 8 is described, e.g., at: page 8, lines 9-17 and lines 30-33. Moreover, the subject matter of the third element of Claim 8 involves, e.g.: element 466 of FIG. 4.

The subject matter of the fourth element (beginning with "up-sampling") recited in Claim 8 is described, e.g., at: page 8, lines 12-14 and 33-34. Moreover, the subject matter of the fourth element of Claim 8 involves, e.g.: element 470 of FIG. 4.

The subject matter of the fifth element (beginning with "high-resolution decoding") recited in Claim 8 is described, e.g., at: page 8, lines 18-22 and page 9, lines 1-2. Moreover, the subject matter of the fifth element of Claim 8 involves, e.g.: element 482 of FIG. 4.

The subject matter of the sixth element (beginning with "summing") recited in Claim 8 is described, e.g., at: page 8, lines 12-14 and 20-23, and page 9, lines 3-5. Moreover, the subject matter of the sixth element of Claim 8 involves, e.g.: element 484 of FIG. 4.

6. Grounds of Rejection to be Reviewed on Appeal

Claims 1-9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over European Patent Application No. EP 0 883 299 A2 to Nakagawa et al. (hereinafter also referred to as "Nakagawa" in short) in view of U.S. Patent No. 6,771,703 to Oguz et al. (hereinafter "Oguz" in short).

The preceding rejection is presented for review in this Appeal.

7. Argument

A. Introduction

In general, the present invention is directed to a method and apparatus for low-complexity spatial scalable decoding (Applicant's Specification, Title). As disclosed in the Applicant's specification, the present invention is directed to the problem of increased complexity in implementing scalable encoding and decoding. For example, as noted at page 1, lines 30-32 of the Applicant's specification: "[s]patial scalable encoders and decoders typically require that the high resolution scalable encoder/decoder provide functionality in addition to what would be present in a non-scalable high-resolution encoder/decoder."

In contrast to the prior art, "[e]mbodiments of the presently disclosed invention provide a method and apparatus for low-complexity, generally low-cost, spatial scalable encoding and decoding" (Applications' specification, p. 3, lines 2-4).

The claims of the pending invention include novel features not shown in the cited references and that have already been pointed out to the Examiner. These features provide advantages over the prior art and dispense with prior art problems such as undue complexity (Applicant's specification, p. 3, lines 2-4).

It is respectfully asserted that Claims 1 and 8 are each patentably distinct and non-obvious over the cited references in their own right. For example, the below-identified limitations of Claims 1 and 9 are not shown in the cited reference. Moreover, these Claims are distinct from each other in that they are directed to different implementations and/or include different limitations. For example, Claim 1 is directed to a spatial scalable video decoder and Claim 8 is directed to a decoding method (Claims 1 and 8, preambles). Accordingly, each of Claims 1 and 8

represent separate features/implementations of the invention that are separately novel and non-obvious with respect to the prior art and to the other claims. As such, Claims 1 and 8 are separately patentable and are each presented for review in this appeal.

B. Whether Claims 1-9 are Unpatentable Under 35 U.S.C. §103(a) by EP 0 883 299 A2 to Nakagawa et al. in view of U.S. Patent No. 6,771,703 to Oguz et al.

"To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art" (MPEP §2143.03, citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious" (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

The Examiner rejected Claims 1-9 as being unpatentable over by EP 0 883 299 A2 to Nakagawa et al. (hereinafter "Nakagawa" in short) in view of U.S. Patent No. 6,771,703 to Oguz et al. (hereinafter "Oguz" in short). The Examiner contends that the cited combination shows all the limitations recited in Claims 1-9.

Nakagawa is directed to an "Apparatus and method for coding and decoding video images" (Nakagawa, Title). In further detail, Nakagawa discloses in the abstract, the following:

> An apparatus and method for coding and decoding digital video images, capable of maintaining the quality of static regions, such as background images, in decoded pictures even when the resolution of pictures has been changed from high to low. The apparatus is equipped with two storage units, low-resolution and high-resolution picture storage units (4,3), to hold reference pictures in two different

> picture formats. When processing coded blocks (or blocks having at least one non-zero transform coefficient), a high-resolution picture updating unit (13) converts corresponding blocks of a low-resolution reference picture retrieved from the low-resolution picture storage unit (4) to obtain high-resolution block images. It then updates a high resolution picture stored in the high-resolution picture storage unit (3) with the obtained high-resolution block images. This updating operation is not applied on non-coded blocks. As a result, only active regions corresponding to the coded blocks are updated within the picture stored in the high-resolution picture storage unit (3), while the remaining part, which may possibly be static background images, is preserved without losing their high visual quality.

Oguz is directed to "Efficient scaling of nonscalable MPEG-2 video" (Oguz, Title). In further detail, Oguz discloses in the abstract, the following

> To reduce bandwidth of non-scalable MPEG-2 coded video, certain non-zero AC DCT coefficients for the 8x8 blocks are removed from the MPEG-2 coded video. In one implementation, high-frequency AC DCT coefficients are removed at the end of the coefficient scan order. This method requires the least computation and is most desirable if the reduced-bandwidth video is to be spatially sub-sampled. In another implementation, the smallest-magnitude AC DCT coefficients are removed. This method may produce an undesirable increase in the frequency of occurrence of escape sequences in the (run, level) coding. This frequency can be reduced by retaining certain non-zero AC DCT coefficients that are not the largest magnitude coefficients, and by increasing a quantization scale to reduce the coefficient levels. The reduced-bandwidth video can be used for a variety of applications, such as browsing for search and play-list generation, bit

stream scaling for splicing, and bit-rate adjustment for services with limited resources and for multiplexing of transport streams.

It will be shown that the limitations of Claims 1-9 reproduced herein are not taught or suggested by the cited references (alone or in combination), and that such Claims should be allowed including those dependent there from.

B1. Claims 1-9

Initially, it is respectfully noted that Claims 2-7 directly or indirectly depend from independent Claim 1, and Claim 9 directly depends from Claim 8. Thus, Claims 2-7 include all the limitations of Claim 1, and Claim 9 includes all the limitations of Claim 8.

It is respectfully asserted that that none of the cited references, either taken singly or in combination, teach or suggest the following recited in Claims 1-7 (with the following applicable to Claims 2-7 by virtue of their respective dependencies from Claim 1) (emphasis added):

> 1. A spatial scalable <u>video decoder</u> for receiving each of a standard-resolution bitstream and a high-resolution scalable bitstream and providing a high-resolution video sequence, the decoder comprising:
>
> an I-picture detector for receiving the standard-resolution bitstream;
>
> a <u>non-scalable</u> standard-resolution Intra decoder in signal communication with the I-picture detector for <u>non-scalably</u> decoding <u>standard-resolution</u> I-pictures <u>to provide decoded standard-resolution I-pictures</u>;
>
> a high-resolution video decoder for receiving the high-resolution scalable bitstream; and
>
> a selector in signal communication with the standard-resolution Intra video

decoder and the high-resolution video decoder for selecting between the outputs from the standard-resolution Intra video decoder and the high-resolution video decoder to provide the high-resolution video sequence.

Moreover, it is respectfully asserted that that none of the cited references, either taken singly or in combination, teach or suggest the following recited in Claims 8-9 (with the following applicable to Claim 9 by virtue of its respective dependency from Claim 8) (emphasis added):

8. A <u>decoding method</u> for providing spatial scalable decoded video data, the method comprising:

receiving a standard-resolution bitstream;

receiving a high-resolution scalable bitstream;

<u>non-scalably</u> Intra decoding <u>standard-resolution</u> I-pictures from the standard-resolution bitstream <u>to provide decoded standard-resolution I-pictures</u>;

up-sampling the decoded I-picture to high-resolution;

high-resolution decoding a current picture from the high-resolution scalable bitstream; and

summing the decoded current picture with the up-sampled I-picture.

Initially, we note that Claims 1-7 explicitly recite and are thus directed to a "video **<u>decoder</u>**". Moreover, Claims 8-9 explicitly recite and are thus directed to a "**<u>decoding</u>** method".

In contrast, <u>all</u> of the portions cited against Claims 1-9 from Nakagawa relate to **<u>ENCODER</u>** figure 1 of Nakagawa. However, as is known to those of ordinary skill in the art, an encoder is not a decoder. For example, even if an encoder has a decoder for

reconstruction purposes, such decoder output is not an external output available as would be the case for an actual dedicated decoder. Thus, even if an encoder includes a decoder for reconstruction purposes, without being able to provide a decoded output, such an encoder can never be a decoder as is known and understood to those of ordinary skill in the art. In that regard, we note that the only output of the encoder of Figure 1 of Nakagawa is from codeword assignment unit 10, which generates "a coded video bitstream" (Nakagawa, col. 6, lines 41-44). Hence, at the onset, the Examiner has not shown all of the limitations of the claims in the cited references and has thus failed to set forth a prima facie case of rejection.

Moreover, each of Claims 1-9 essentially recite non-scalably Intra decoding standard-resolution I-pictures from the standard-resolution bitstream to provide decoded standard-resolution I-pictures. In contrast, the cited portion of Nakagawa, namely col. 5, lines 22-27, disclose the following:

> a first updating unit to convert the low-resolution picture retrieved from the low-resolution picture storage unit 4 to obtain high-resolution block images corresponding only to coded blocks with non-zero motion vectors and intra-coded (i.e., intra-frame coded) blocks, while the low resolution mode is effective, and store the high-resolution block images to the high-resolution picture storage unit 3....

Thus, one difference between the above reproduced limitations of Claims 1-9 and the cited portion of Nakagawa is, as noted above, that the former pertains to a video decoder while the latter pertains to a video encoder. We note that the same is not a trivial

difference as an encoder (including the encoder shown in Figure 1 of Nakagawa) does not provide a decoded external output.

Another difference between the above reproduced limitations of Claims 1-9 and the cited portion of Nakagawa is that while the reproduced limitations explicitly involve non-scalably decoding (i.e., from a standard-resolution to a standard-resolution), the cited portion involve what amounts to scalably converting (i.e., from a low-resolution to a high-resolution). Thus, in this regard, the cited portion of Nakagawa actually teaches away from the explicit limitations recited in Claims 1-9. However, as set forth in MPEP 2145.X.D.1: It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983) (The claimed catalyst which contained both iron and an alkali metal was not suggested by the combination of a reference which taught the interchangeability of antimony and alkali metal with the same beneficial result, combined with a reference expressly excluding antimony from, and adding iron to, a catalyst.).

Moreover, <u>converting</u> as disclosed by Nakagawa <u>is not the same as decoding</u> as recited in Claims 1-9<u>, as decoding requires being previously encoded while converting does not</u>. In fact, <u>a conversion would seem to require the same states regarding pre-conversion and post-conversion, namely an uncompressed picture</u>.

Yet another difference between the above reproduced limitations of Claims 1-9 and the cited portion of Nakagawa is that the outputs of the "non-scalable standard-resolution Intra decoder" recited in Claim 1-7 and the step of <u>non scalably</u> Intra decoding recited in Claims 8-9 are "decoded **<u>standard-resolution</u>** I-pictures", while the output of

the first updating unit cited by the Examiner are high-resolution images (and the only output of the encoder of Figure 1 of Nakagawa is a coded video bitstream as noted above).

We will now address decoder Figure 2 of Nakagawa. The same completely fails to teach or suggest, *inter alia*, non-scalably Intra decoding standard-resolution I-pictures from the standard-resolution bitstream to provide decoded standard-resolution I-pictures as essentially recited in Claims 1-9. For example, we initially note that while the recited limitations of Claims 1-9 provide a low complexity approach to decoding, with such low complexity pertaining to, *inter alia*, a fixed resolution (input a compressed (encoded) standard-resolution picture and output an uncompressed (decoded) standard-resolution picture and the limiting of decoded pictures to intra pictures which are clearly less complex to decode than inter-coded pictures such as P or B-pictures, as is readily known and understood to one of ordinary skill in the art.

In contrast, the decoded picture generator 28 in Figure 2 of Nakagawa outputs both low-resolution and high-resolution pictures (see, e.g., Nakagawa, col. 19, lines 22-25). Moreover, the decoded picture generator 28 in Figure 2 of Nakagawa outputs both intra coded and inter coded pictures (see, e.g., Nakagawa, col. 19, lines 50-53, and col. 20, lines 4-5). Thus, un-cited decoder Figure 2 of Nakagawa also fails to teach or suggest the above reproduced limitations of Claims 1-9.

Thus, in all these regards, Nakagawa fails to teach or suggest all the above reproduced limitations of Claims 1-9.

Hence, Nakagawa does not disclose the above recited limitations for at least the preceding reasons. Moreover, Oguz does not cure the deficiencies of Nakagawa, and is silent regarding the same. Since the combination of Nakagawa and Oguz does not disclose each of the above-recited claim limitations, a proper obviousness rejection has not been put forth by the Examiner, and the rejections must be reversed. Further, even assuming, arguendo, that all of the recited claim limitations can be found in the recited references – the combination of the references would be improper since Nakagawa actually teaches away from combining references to achieve the explicitly recited limitations.

Accordingly, Claims 1-9 are patentably distinct and non-obvious over the cited references for at least the reasons set forth above. Therefore, reversal of the rejection of Claims 1-9 is earnestly requested.

C. Conclusion

At least the above-identified limitations of the pending claims are not described, disclosed, nor suggested by the contents of the Nakagawa or Oguz references, considered alone or in combination.

Accordingly, it is respectfully requested that the Board reverse the rejection of independent Claims 1-9 under 35 U.S.C. §103(a).

Please charge the amount of $540.00, covering fee associated with the filing of the Appeal Brief, to **Thomson Licensing Inc., Deposit Account No. 07-0832**. In the event of any non-payment or improper payment of a required fee, the Commissioner is authorized to charge **Deposit Account No. 07-0832** as required to correct the error.

Respectfully submitted,

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8. CLAIMS APPENDIX

1. (Previously Presented) A spatial scalable video decoder for receiving each of a standard-resolution bitstream and a high-resolution scalable bitstream and providing a high-resolution video sequence, the decoder comprising:

an I-picture detector for receiving the standard-resolution bitstream;

a non-scalable standard-resolution Intra decoder in signal communication with the I-picture detector for non-scalably decoding standard-resolution I-pictures to provide decoded standard-resolution I-pictures;

a high-resolution video decoder for receiving the high-resolution scalable bitstream; and

a selector in signal communication with the standard-resolution Intra video decoder and the high-resolution video decoder for selecting between the outputs from the standard-resolution Intra video decoder and the high-resolution video decoder to provide the high-resolution video sequence.

2. (Original) A decoder as defined in Claim 1, further comprising an I-picture indicator in signal communication between the standard-resolution Intra decoder and the selector.

3. (Original) A decoder as defined in Claim 1, further comprising an I-picture selector in signal communication with the I-picture detector.

4. (Previously Presented) A decoder as defined in Claim 1, further comprising an upsampler in signal communication with the standard-resolution Intra decoder.

5. (Previously Presented) A decoder as defined in Claim 1, further comprising a summing unit in signal communication with the high-resolution decoder.

6. (Previously Presented) A decoder as defined in Claim 1, further comprising high-resolution frame stores in signal communication with the high-resolution decoder.

7. (Original) A decoder as defined in Claim 6 wherein the high-resolution frame stores is in signal communication with the selector for receiving the high-resolution video sequence.

8. (Previously Presented) A decoding method for providing spatial scalable decoded video data, the method comprising:

receiving a standard-resolution bitstream;

receiving a high-resolution scalable bitstream;

non-scalably Intra decoding standard-resolution I-pictures from the standard-resolution bitstream to provide decoded standard-resolution I-pictures;

up-sampling the decoded I-picture to high-resolution;

high-resolution decoding a current picture from the high-resolution scalable bitstream; and

summing the decoded current picture with the up-sampled I-picture.

9. (Original) A decoding method as defined in Claim 8, further comprising:

selecting one of the decoded current picture and the summed picture in response to an indication of the presence of an I-picture; and

outputting the selected picture in a high-resolution video sequence.

9. RELATED EVIDENCE APPENDIX

None.

10. RELATED PROCEEDINGS APPENDIX

None.